second semester
1402-1403

Computer vision basics course

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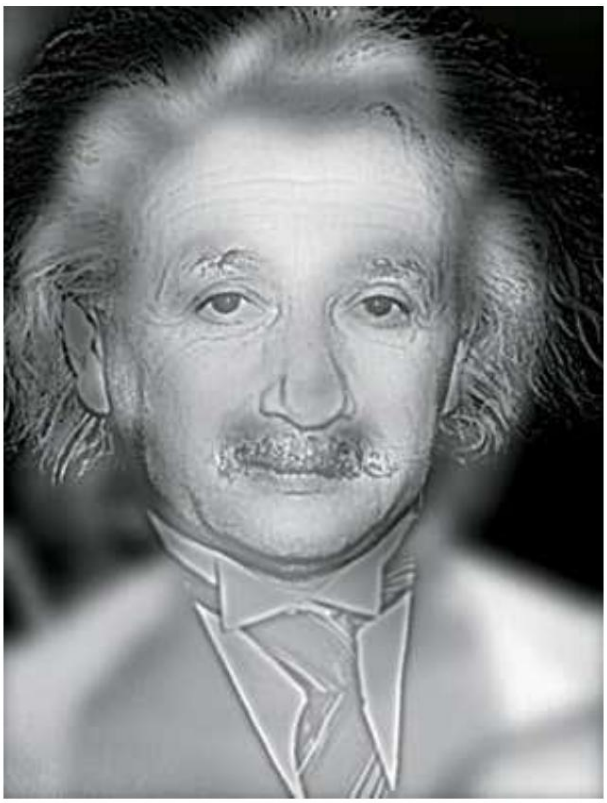
The first project: creating hybrid images

The purpose of this project is to learn about hybrid images and implement how to create these images in MATLAB. Hybrid images, as the name suggests, are images that are formed by combining two normal images in such a way that when we look at the image at a very small size (or from a distance), we see one image and the other image of the images. constituent, and when it is in a large size (or from a relatively close distance), the constituent's gaze can be seen more clearly in it. This means that both constituent images are really present in the image, but according to the size of the image (or The distance between the viewer and the image (one of the two images) can be seen more clearly in the image.

For example, the image below is a hybrid image:



As you can see, the image of Albert Einstein can be seen almost clearly in the above image. Now, if we shrink the same image (or if we look at it from a further distance), the current image will almost disappear and another image will appear: became

As you can see, after shrinking the image, the image of Marilyn Monroe appears in it.

The method of creating a hybrid image from two images A and B:

• First apply a low-pass filter (pass-low) on one of the images. • Then apply a high-pass filter (pass-high) on the other image. • Then, using image addition, combine the two obtained images together to create a hybrid image to achieve

Important points:

The written code along with images 1. All steps of making hybrid images must be implemented in MATLAB and used as a zip file whose name is as follows:

CV_BA_Project1_name family.zip

2. **By executing your code, two images should be read, their hybrid image should be created and displayed, and there should be no need to make any changes or adjustments by the proofreader (otherwise, you will not be awarded a grade).** 3. You can use two images of your choice and it is important to choose the right image in this project. 4. **You cannot** use the image used in the above example. 5. Try to apply Make changes to the images, try to make them the same size, for example, if the faces of people or animals are in the same place in both images How to implement it may first be necessary to convert the images to double data type, for this you can use the double2im function (it is recommended to read its description in MATLAB help before using) or directly use the double function (note that as mentioned at the beginning, according to the implementation method, this will not necessarily be necessary). Applying a low-pass filter to an image, apply a high-pass filter and vice versa (get a better result). 8. You may need to adjust the parameters of the filters that can be used visually. error (to a good result in terms of